REMARKS/ARGUMENTS

Claims 1, 3-5 and 7-30 were pending in the Application. By this Amendment, claims 1, 5, 10, 11, 13, 16 and 18 are being amended, and new claims 31-34 are being added, to advance the prosecution of the Application. No new matter is involved.

In Paragraph 6 on page 2 of the Office Action, claims 1, 5, 9-15, 18-28 and 30 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,920,301 of Sakamoto, et al. in view of U.S. Patent 4,942,458 of Miyajima, et al. In Paragraph 32 on page 9 of the Office Action, claims 16, 17 and 29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakamoto in view of Miyajima and further in view of U.S. Patent 5,691,791 of Nakamura, et al. In Paragraph 38 on page 10 of the Office Action, claims 3 and 7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakamoto in view of Miyajima and further in view of U.S. Patent 6,078,317 of Sawada. In Paragraph 41 on page 11 of the Office Action, claims 4 and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakamoto in view of Miyajima and further in view of U.S. Patent 5,834,827 of Miyasaka, et al. These rejections are respectfully traversed.

Sakamoto '301 discloses, in Fig. 12 thereof, processing of signals for each of R, G, and B in a ferroelectric liquid crystal display. In other words, the reference discloses a color display LCD in which each of an R signal, a G signal, and a B signal is input to a frame memory 57 in a driver circuit module 71 and the R signal, G signal, and B signal are then processed. However, as admitted in the Office Action, there is no intent in Sakamoto to control upper limit values for ranges of possible voltages for the R, G, and B signals over the overall display period.

Regarding Miyajima '458, this reference discloses that an effective voltage and transmittance in liquid crystal differ among R, G, and B. More specifically, the

reference discloses a passive matrix LCD in which a voltage is supplied to the liquid crystal so that the same transmittance can be obtained for R, G, and B.

However, Miyajima '458 fails to disclose or suggest an active matrix LCD as provided by the present invention in which each pixel comprises a thin film transistor. Therefore, the reference fails to disclose or suggest the actual adjustment of "display data to be supplied to each pixel" for each of R, G, and B in an active matrix LCD.

Moreover, in the driving method of the passive matrix LCD disclosed in Miyajima, the effective voltage is changed by changing a "pulse width" of the display driving signal for R, G, and B. Therefore, in Miyajima, the "maximum absolute value" of the driving voltage signal to be supplied to each pixel is not limited, unlike the present invention. This is clear from, for example, the waveform diagrams for R and for G and B for switching the liquid crystal "ON", shown in Figs. 8(a), 8(b), 3(a), and 3(b) of Miyajima. In these waveform diagrams, the "maximum value" for all of the waveforms for "ON" is Vo.

In Miyajima '458, the value which is described as being changeable among R, G, and B is the threshold value of a difference for converting analog data to digital data, and the "pulse width" is changed by changing this threshold value.

The Office Action states that "Miyajima (Figs. 6 and 7a-c) teaches a voltage characteristic where the upper limit for at least one of the colors differs from the upper limit values for the other colors (any transmittance point on the transmittance vs. Vrms curve will result in two voltages, i.e. V2 and Von. Further, the curve R reaches maximum transmittance at a lower voltage than the GB curves and therefore the upper limit value is different). Miyajima also teaches simultaneously controlling the intensity of the R, G, and B light (figs. 7a-c where each pulse occurs at the same time)." However, Miyajima fails to disclose or even

suggest limiting of a maximum absolute value of the driving voltage to be applied to each pixel, as in the case of the present invention.

Claim 1 defines "A liquid crystal display having liquid crystal sandwiched between a pair of substrates having electrodes for driving the liquid crystal based on respective R, G, and B signals to control transmittance of each of the R, G, and B light components for color display". In the liquid crystal display of claim 1 "each of upper limit values of ranges for driving voltages respectively for R display, G display, and B display applied to the liquid crystal is set independently for R light, G light, and B light, without a control voltage applied to the substrates to control the intensity of R, G, and B light simultaneously." Further, "an upper limit value for a range of values usable within an entire duration of display as driving voltages for respective R, G, and B light components is set independently for each of R, G, and B light components". Still further, "among said independently set upper limit values for respective R, G, and B light components, an upper limit value for at least one of the colors differs from the upper limit values for the other colors".

As amended herein, the liquid crystal display of claim 1 further includes "a display portion having a plurality of pixels in a matrix form, and a driver circuit for said display portion which supplies a driving voltage signal corresponding to display content to a corresponding one of said pixels in said display portion".

The liquid crystal display of claim 1 as the claim is amended herein, is further characterized by "said electrode for driving said liquid crystal provided on a first substrate among said pair of substrates is a pixel electrode of a matrix form which is individually formed for each of said pixels and is connected to a thin film transistor, and said driver circuit for said display portion comprises a maximum transmittance voltage limiter which limits an absolute value of a maximum transmittance of liquid crystal of said driving voltage signal which exists for each of

R, G, and B to a voltage determined according to a transmittance characteristic of each of R, G, and B, and said driving voltage signal in which the maximum transmittance voltage level is limited is supplied to a corresponding one of said pixels of said display portion through said thin film transistor".

As so amended, claim 1 is submitted to clearly distinguish patentably over the cited references. Claims 3 and 4 depend from and contain all of the limitations of claim 1, so that such claims are also submitted to clearly distinguish patentably over the references.

Independent claims 5, 10, 11, 13, 16 and 18 define a liquid crystal display in combinations similar to that of claim 1 and, as amended herein, include the same language being added to claim 1. Accordingly, such claims are also submitted to clearly distinguish patentably over the references. In the case of independent claim 19, such claim already includes limitations similar to those being added to claims 1, 5, 10, 11, 13, 16 and 18, so that such claim is also submitted to clearly distinguish patentably over the prior art.

Dependent claims 7-9, 12, 14, 15, 17, and 20-30 depend directly or indirectly from and contain all of the limitations of one of the independent claims, so that such claims are also submitted to clearly distinguish patentably over the cited references.

New claims 31-34 define a voltage-driven birefringence type liquid crystal display in a manner which is submitted to clearly distinguish patentably over the art. In independent claim 31, the limiting of a maximum absolute value of the driving voltage in accordance with the present invention is recited in terms of limiting "maximum absolute values of levels of non-inverted driving voltage signal and inverted driving voltage signal for determining a maximum transmittance voltage level for achieving a maximum transmittance of liquid crystal of said driving voltage signal which exists for each of R, G, and B to a voltage determined

according to a transmittance characteristic of each of R, G, and B". In the liquid crystal display of Miyajima '458, the "pulse width" is adjusted in a similar manner regardless of whether the driving voltage signal is in the state of non-inversion or in the state of inversion. Therefore, fundamentally, there is no necessity for controlling an "absolute value of the driving voltage". In other words, it is clear that Miyajima fails to disclose or even suggest adjustment of an "absolute value" of the driving voltage to be supplied to each pixel.

Therefore, new claim 31 is submitted to clearly distinguish patentably over the cited references. New claims 32-34 depend from and contain all of the limitations of claim 31, so that such claims are also submitted to clearly distinguish patentably over the references.

Accompanying this Amendment is an IDS (Information Disclosure Statement). The IDS cites an Office Action in a corresponding Japanese Application and the references cited in such Office Action. The IDS includes certain other references as well.

In conclusion, claims 1, 3-5 and 7-30 and new claims 31-34 are submitted to clearly distinguish patentably over the prior art. Therefore, reconsideration and allowance are respectfully requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 337-6700 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,

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